

WE CLAIM:

1. A laminated ink distribution structure for a printhead, comprising:
 - a laminated stack having a first layer in which is formed a number of first holes, each first hole being in registry with a supply of ink or air;
 - 5 the stack having a number of subsequent layers, each subsequent layer having formed in it, vertical passages and transverse channels for bringing ink, via the holes of the first layer, to one of a number of printhead chips located as an array that is carried by an array of slots in a lower a chip restraining layer.
- 10 2. The ink distribution structure of claim 1, further comprising:
 - printhead chips located in the slots;
 - each chip having a large number of ink ejecting nozzles on a lower surface;
 - each nozzle supplied by an ink passage that passes through a chip;
 - each ink passage supplied with ink from an opening or slot formed in a layer 15 of the stack above the chip.
3. The ink distribution structure of claim 1, wherein:
 - the first and subsequent layers are adhered to one another.
- 20 4. The ink distribution structure of claim 1, further comprising:
 - a distribution molding, the distribution molding having a longitudinal axis and a number of elongated ducts running in parallel along the axis;
 - the ducts supplying inks to the first layer of the ink distribution structure.
- 25 5. The ink distribution structure of claim 4, further comprising:
 - a duct cover in which is formed a number of inlet ports which are adapted to receive liquid ink;
 - the duct cover sealing against the distribution molding and supplying, via cross flow ink channels, the elongated ducts.
- 30 6. The ink distribution structure of claim 1, wherein:

subsequent layers in the stack have between them an electrically conductive film having one end which is electrically connected to the chips.

7. The ink distribution structure of claim 6, wherein:

5 the film is flexible and extends out of the stack to make electrical contact with a printhead controlling printed circuit board.

8. The ink distribution structure of claim 7, further comprising:

recesses in the lower chip restraining layer to accommodate the film.

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9. The ink distribution structure of claim 1, wherein:

the stack further comprises a laminated manifold with bifurcated channels for distributing inks and air to a number of delivery locations associated with each of the printhead chips.

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10. The ink distribution structure of claim 1, wherein:

each chip is associated with a nozzle guard assembly in which is formed an array of microapertures that are aligned with nozzles of the chips, so that an ink drop ejected at high speed from the nozzle array passes through a microaperture.

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11. The ink distribution structure of claim 10, wherein:

the first layer and subsequent layers further comprise air distribution passages which carry compressed air for discharge at locations between each of the printhead chips and the nozzle guards.

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12. The ink distribution structure of claim 1, wherein:

the stack further comprises layers of a micro-molded acetal plastic, adhered to one another and forming a distribution network in which transverse channels in one or more layers lead to and from through holes which carry ink or air between layers.

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13. The ink distribution structure of claim 1, wherein:

the stack has a longitudinal axis and the individual printhead chips and the slots in the final layer are arranged at an angle to the longitudinal axis, with a slight overlap between each print chip.

5 14. The ink distribution structure of claim 6, wherein:

the distribution molding is sandwiched and sealed between the duct cover and the stack and supported within a chassis;
the film extending out of the stack to make electrical contact with a printhead controlling printed circuit board which is carried by the chassis;

10 a film backing pad maintaining the film in electrical contact with an undersurface of the printed circuit board.

15. The ink distribution structure of claim 1, further comprising:

a longitudinal air duct, carried by the distribution molding, within which is located an air valve formed as a channel with a series of apertures in its base; and
the apertures corresponding to air passages formed in the air duct so that the apertures can be brought into and out of alignment with the passages to selectively allow pressurized air through and into the stack.

20 16. The ink distribution structure of claim 15, further comprising:

a spring maintaining a sealing inter-engagement of a bottom of the air valve with a base of the air duct to prevent leakage.

17. The ink distribution structure of claim 15, wherein:

25 the air valve has a cam follower extending from one end, which engages an air valve cam surface on an end cap of a multi-purpose platen so as to selectively move the air valve molding longitudinally within the air duct according to a rotational position of the platen, wherein the platen may be rotated between printing, capping or blotting positions.

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18. The ink distribution structure of claim 17, wherein:

the platen has a position for printing in which the cam holds the air valve in an open position to supply air to the print chip; and

when the platen is rotated to a non-printing position, sealing off a plurality of micro-apertures in the nozzle guard.

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19. The ink distribution structure of claim 17, wherein:

the platen member has an exposed blotting portion, the portion being an exposed part of a body of blotting material located inside the platen.

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20. The ink distribution structure of claim 17, further comprising:

a capping assembly which is supported at each end by a bearing molding; each bearing molding having a pair of vertical rails;

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the four vertical rails enabling the capping assembly to move vertically.

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